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None

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INT CL⁴ G06K, G07C

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(54) Operator-unattended checkout of bulk and other articles

(57) An operator-unattended checkout system for articles to be purchased and of first type bearing supplier-applied UPC indication and of second type not having supplier-applied UPC indication includes a reader (10) for UPC indications where present on articles, a first processing part operable without customer input for using the reader output signals for determining the first type article price, and a second processing part operable on customer input to a display unit (11) for using weight output signals from a scale (22) for obtaining second type article price. The processing operation is controlled by a central processor (23) together with associated price data store (24), icon store (25) and weight range store (26). A surveillance system (29) and associated camera (19) and display (30) may also be included.

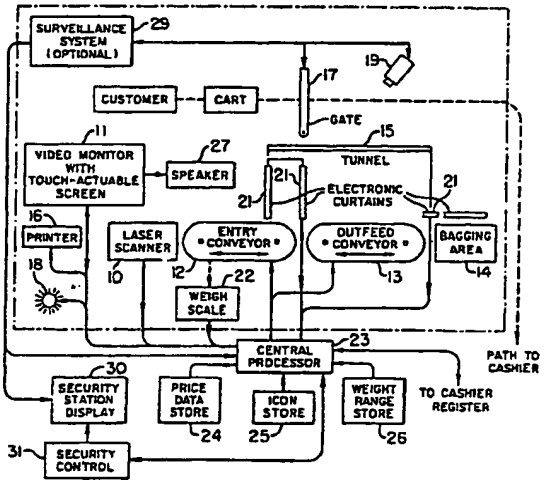

FIG. 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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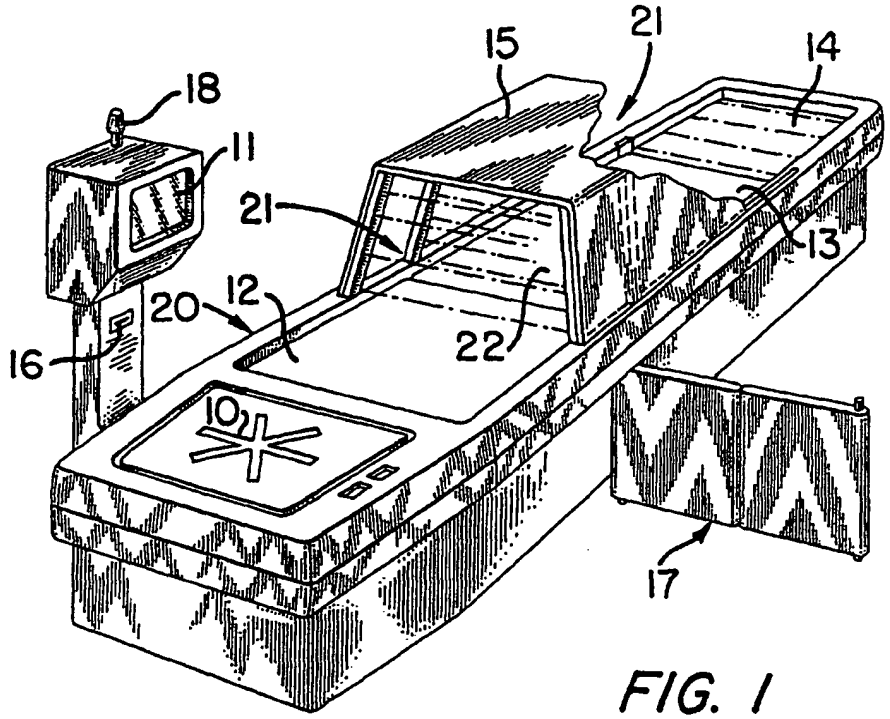

FIG. 1
(PRIOR ART)

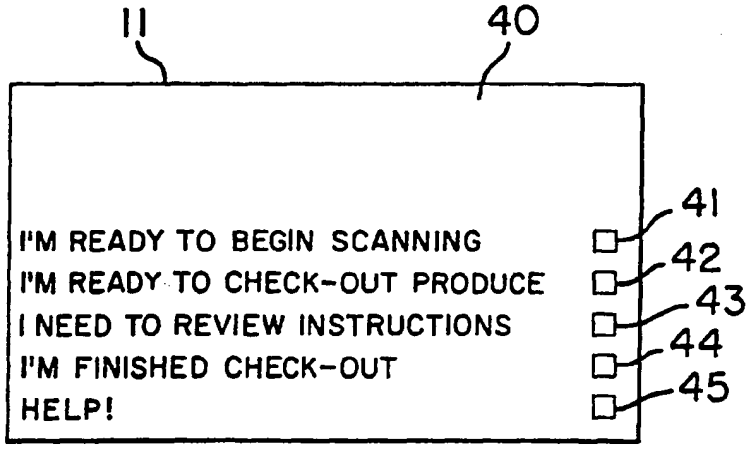

FIG. 3

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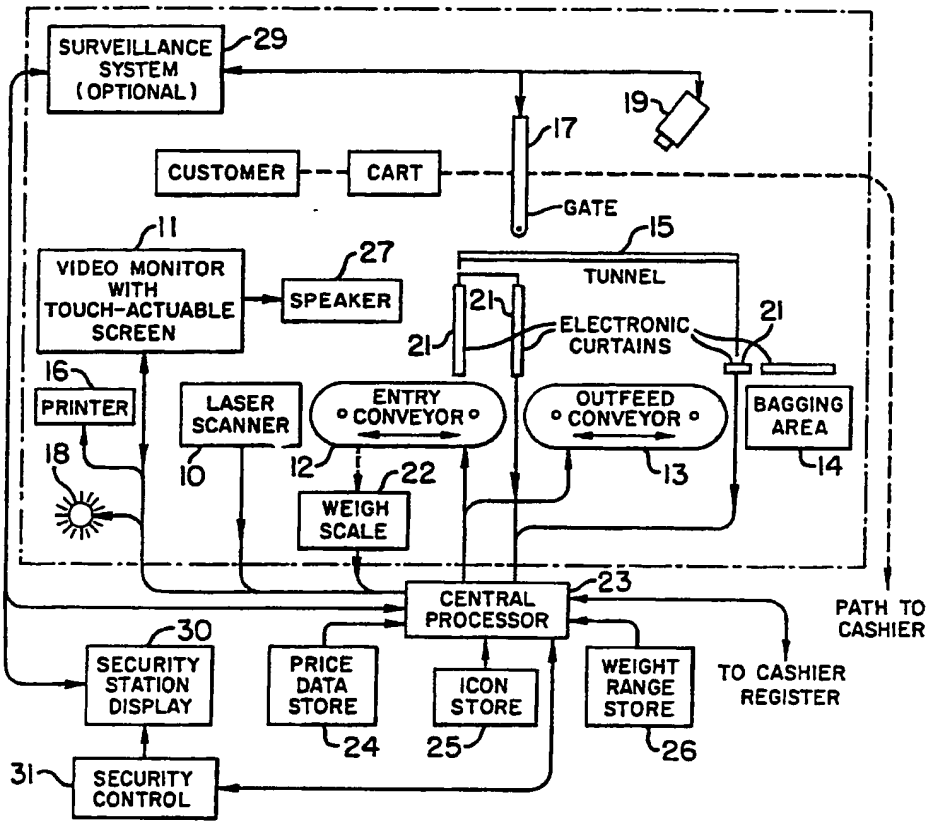

FIG. 2

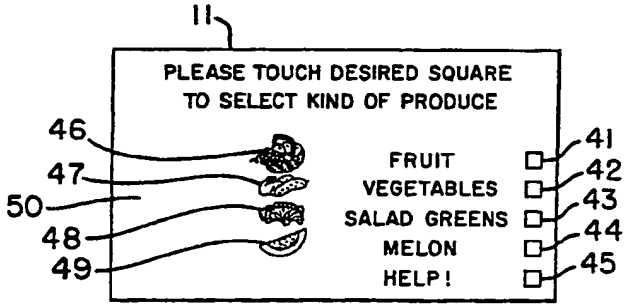

FIG. 4

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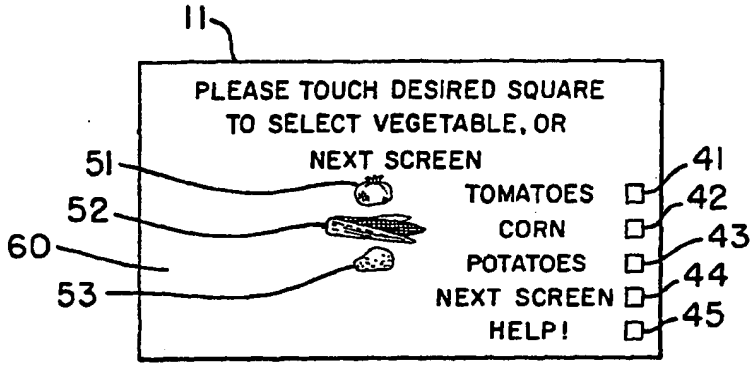

FIG. 5

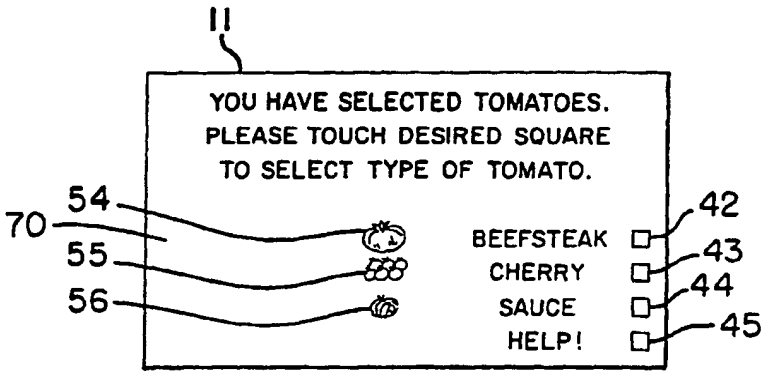

FIG. 6

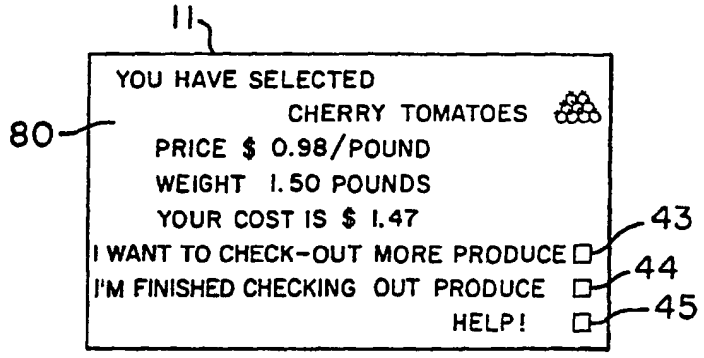

FIG. 7

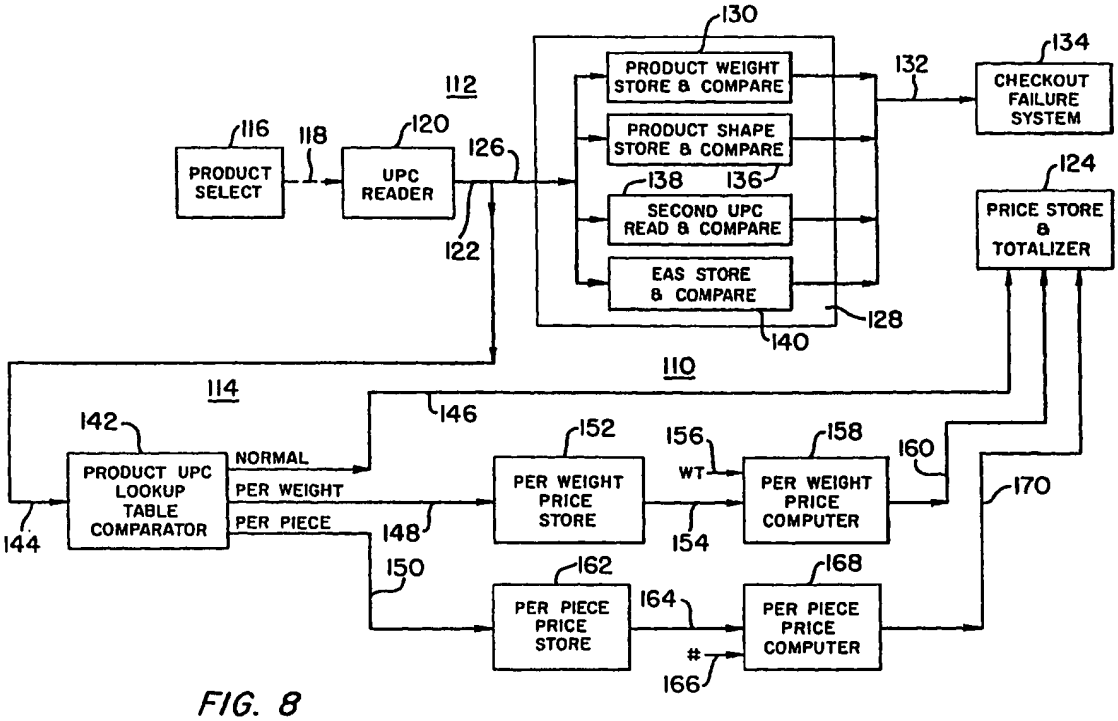

FIG. 8

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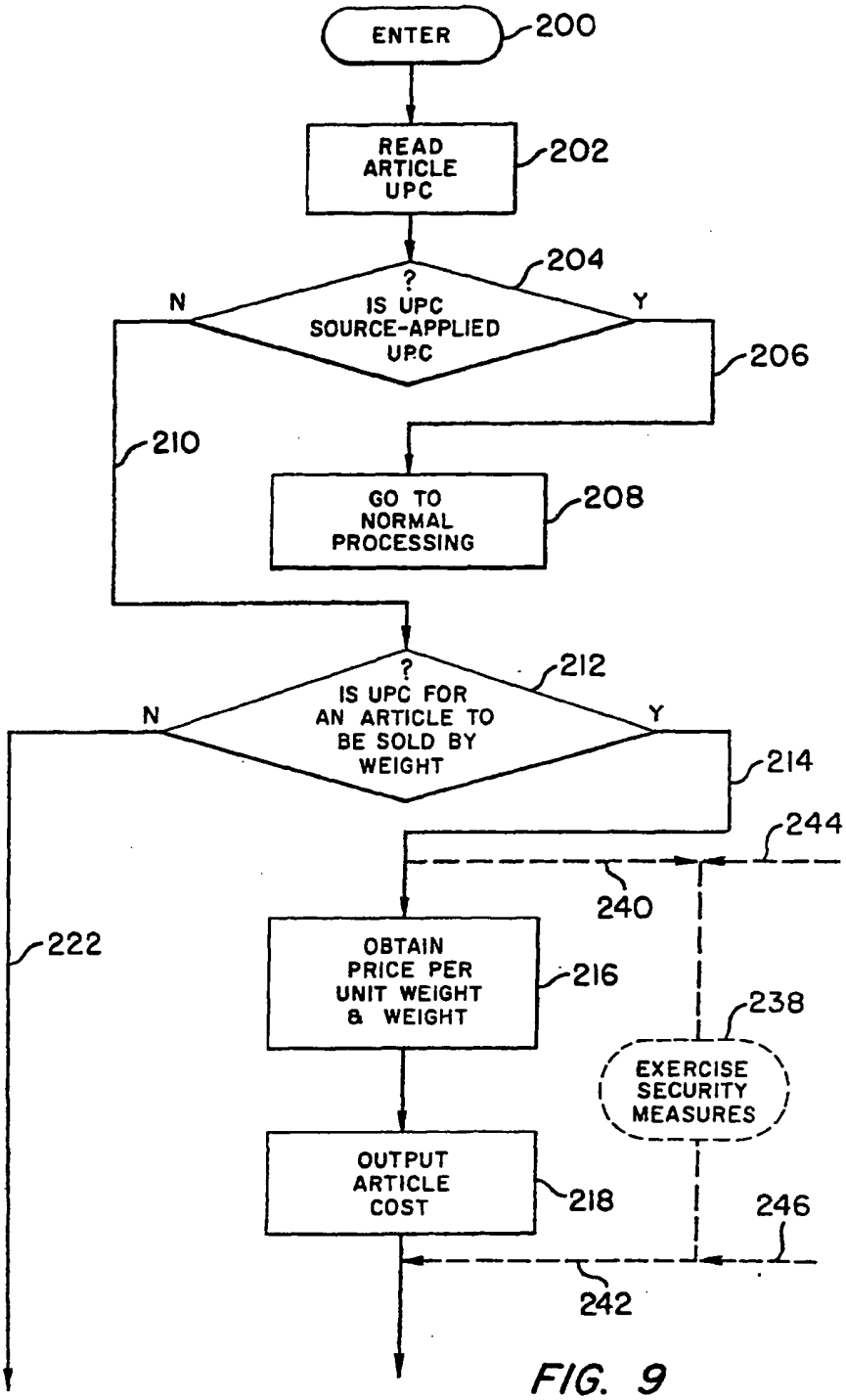

FIG. 9

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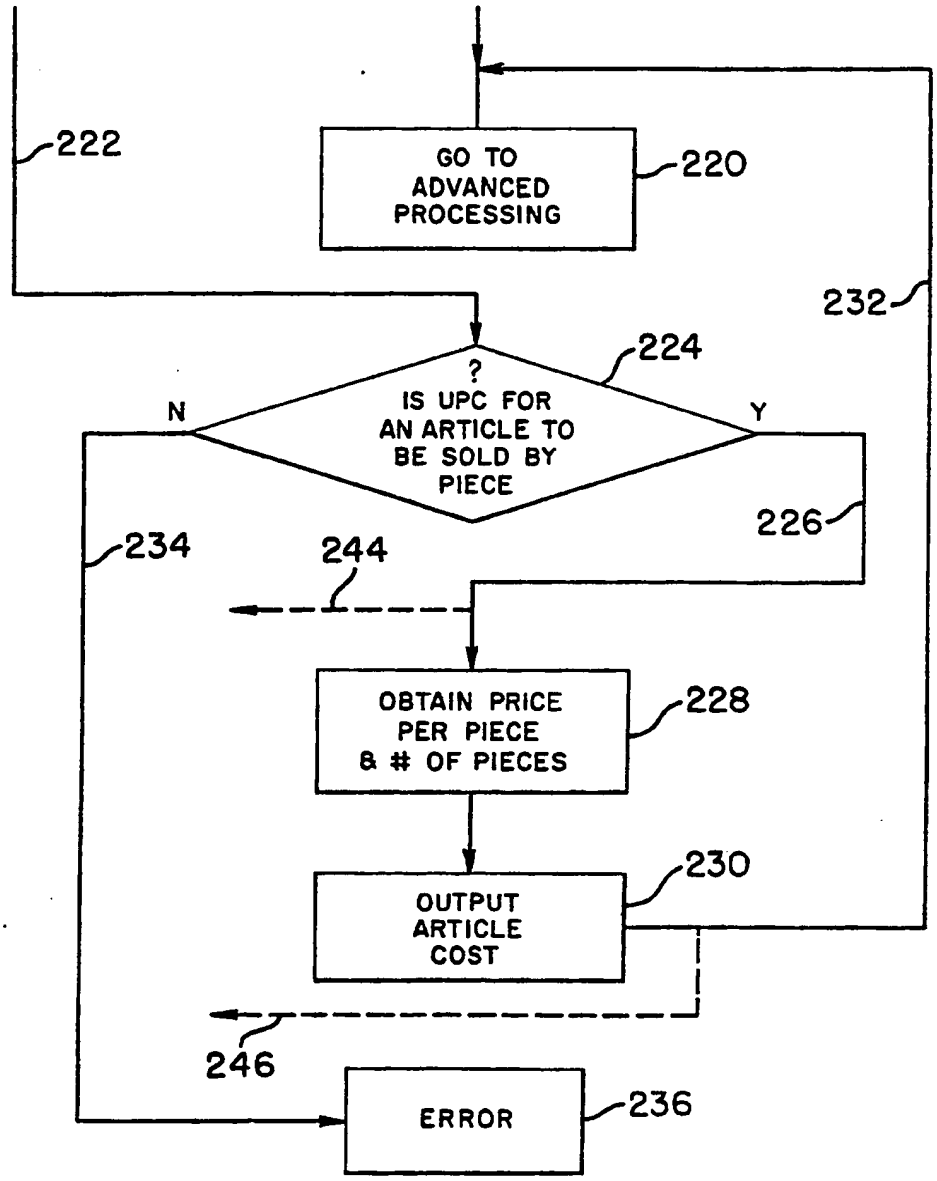

FIG. 10

"A SYSTEM FOR OPERATOR-UNATTENDED CHECKOUT OF BULK AND OTHER ARTICLES"

The present invention relates generally to operator-unattended checkout systems and methods and pertains more particularly to the self-service checkout of bulk articles, which are not provided with universal product code (UPC) indication by the source of the articles and are for sale on a weight or piece price basis, as well as other articles of type having source-provided UPC indication.

United States Patents Nos. 4,676,343 and 4,792,018, disclose systems for the automated checkout of articles selected by a customer for purchase in supermarkets and like facilities. The former patent involves an arrangement addressing articles which bear a UPC indication, typically in the form of a bar code uniquely indicative of the identity of the article bearing the code. The UPC of each article selected for purchase is scanned or read and a signal indicative of the article identity is generated and applied to a central processing unit which has stored in associated memory the UPCs of all articles available for purchase which are so encoded, correlated with the price and other characteristics of the articles, such as weight.

Articles are placed on a conveyor following UPC scanning and thereby led into a so-called "security tunnel", which is guarded against customer fraud by various light curtains, which are in the form of light sources and associated photocells. In the course of article conveyance,

its weight is physically measured and a signal is generated indicative of the measurement.

Comparison is made of the stored, weight-indicative signal and the physical measured signal. If the comparison is negative, indicative of potential customer fraud, article processing is interrupted and various courses of action are obtainable, one being the reverse movement of the conveyor. Otherwise, in the course of continuing positive comparison results, the customer's order is carried forward, with price totalization effected from stored price-indicative signals.

In the latter patent, a number of further security measures are effected to detect customer fraud or checkout failure. In one such additional measure, article shape is detected, such as by the light curtain at the entry to the security tunnel. The CPU storage includes, with the article identity code a cross-correlation of article shape. This compilation is desirably made from the system itself, as by storage of detected article shape in a system set up mode, through use of the light curtain output signals.

A second additional measure is the repeat reading of article UPC in the security tunnel and comparison of the same with that read by the scanner. Checkout failure would be present on negative comparison in this respect.

A third additional measure is the introduction of electronic article surveillance (EAS) practice in the security tunnel. Here, storage is made with UPC of whether or not the article so encoded should have an EAS tag

thereon. If the article is detected as having an EAS tag thereon and storage indicates that it should not, such as would be the case where a customer tries fraudulently to substitute an expensive wine purchase for a cheaper wine subjected to UPC scanning, checkout failure would again occur.

One difficulty in the operator-unattended checkout of articles, in the supermarket environment, has been the matter of bulk or non-prepackaged goods. These goods, such as food market produce items, are provided in bulk layout in bins or other compartments, for customer selection and bagging in plastic wrappers dispensable at the produce location. Typically, the customer selects the produce, places the same in the plastics wrapper, brings same to the point of checkout and manual checkout assistance is requisite for effecting pricing and output of the selected produce.

It is an object of the present invention to provide improved systems and methods for operator-unassisted checkout.

A more particular object of the invention is to provide enhanced systems and methods of type above discussed which also effect automated checkout of bulk articles not prepackaged and not UPC-identified by a source or supplier to food supermarkets and like facilities.

In its broadest aspect the invention provides a method for the operator-unassisted checkout of articles, inclusive of articles having source-applied UPC indication

and bulk articles, typically of the nature of produce or the like. In a first system embodiment, the bulk articles to be processed bear no UPC indication whatever, i.e., do not have source-applied or locally (facility)-applied UPC indication. In a second system embodiment, the articles to be processed, while not having source-applied UPC indication, have facility-applied readable labels. Both system embodiments also process articles having source-applied UPC indication and may be described in common as follows. There is provided hereby, in combination, in an operator-unattended checkout system for processing articles selected for purchase and of first type bearing supplied-applied UPC indication and of second type not having supplier-applied UPC indication:

(a) a reader for generating output signals indicative of article UPC indication where present on articles;

(b) a first processing part operable without customer input for using the reader output signals for determining first type article price and generating output signals indicative thereof;

(c) a customer-interactive display unit for use through customer input thereto for directing system operation selectively from such first processing part operation to the computation of second type article price;

(d) a scale for determining article weight and generating output signals indicative of determined article weight; and

(e) second processing means operable on said customer input to said display means for using said scale means output signals for generating output signals indicative of second type article price.

Where the second type article selected for purchase bears no UPC indication, the display presents a first display message for customer initiated checkout of the articles. This activity would typically succeed checkout of all articles of the first type. More particularly, the second processor part is responsive to customer interaction with the display during display of the first message for displaying a second display message comprising icons indicative of articles of the second type bearing no UPC indication, the display being responsive to customer interaction with the second display message for generating output signals indicative of customer selected icons.

The second processor part includes memory storing therein first signals indicative of the icons and second signals correlated with the first signals and indicative of price per unit weight of articles of the second type bearing no UPC indication.

The second processor part further includes a comparator for receiving the display output signals and comparing them with the stored first signals and generating as the second processor part output signals, the stored second signal correlated with stored first signals giving rise to affirmative comparison. The price thus provided is used with article weight indication for computing article

price.

In the alternative system embodiment wherein the articles of second type selected bear UPC indication which is facility-applied, the second processor part includes a comparator for receipt of the reader output signals and provides first and second separate output signals respectively indicating that the UPC indication in the reader output signals is for an article retailed by bulk weight pricing, and the UPC indication in the reader output signals is for an article retailed per piece pricing.

In this system embodiment, the second processor part includes memory for storage of first and second stored signals respectively indicative of article price per unit of weight and article price per piece, both cross-correlated with article UPC indication. The customer is interfaced with the display and advised to participate, as by weighing the selected article or indicating the number of pieces of the selected article. First and second identifying signals are generated, respectively indicative of the weight and the numbers of an article selected for purchase. The second processor part further includes first computer circuitry operative upon occurrence of the comparator first output signal for receiving the first stored signal and the first identifying signal and computing selected article price therefrom and second circuitry operative upon occurrence of the comparator second output signal for receiving the second stored signal and the second identifying signal and computing selected article price therefrom.

The present invention will now be described in greater detail by way of examples with reference to the accompanying drawings, wherein:-

Fig. 1 is a perspective view of a known type of self-checkout counter;

Fig. 2 is a block diagram illustrating a first embodiment of the present invention incorporated into the system controlling the Fig. 1 counter;

Figs. 3 to 7 illustrate a typical sequence of video displays provided for customer selection of icons corresponding to produce items being checked-out;

Fig. 8 is a block diagram illustrating a second embodiment incorporated into the system controlling the Fig.1 counter; and

Figs. 9 and 10 are flow charts of the operations involved in the system and practice of the second embodiment.

The self-checkout system according to this invention, is incorporated into a self-checkout system for articles which are provided with source-applied UPC labels, such as is described in the above referred to U.S. Patents.

The parts of such a prior art system most pertinent to this invention are shown in Fig. 1. A checkout counter 20 comprises a laser universal product code (UPC) reader 10, a display screen 11 for interactive customer communication, an entry conveyor 12, an out feed conveyor 13, a bagging area 14, a security tunnel 15, passageway control gate 17 and an assistance signal lamp 18.

A single cashier and cashier register may be provided for groups of checkout counters, each group having two or more counters therein. Each cashier register station is provided with a master monitor screen, a keyboard with cash drawer, a final sales slip printer and a customer viewable display. The details of the cashier station are available directly from the above referred to patents.

Most products in a supermarket are provided with identification in the form of source-applied UPC indication, which uniquely identifies the product.

In using such a checkout counter, a customer approaches the counter with items to be purchased, usually transported in a conventional shopping cart. If the counter is available for use, the display screen 11 will carry certain messages instructing the customer in use of the system. The display screen 11 is preferably touch-sensitive or touch-activated by touching with a human digit at any one of a number of predetermined locations. Applying a finger to one of the locations is equivalent to operating a switch or pressing a signal button, and communicates to a central processor whatever affirmative response has been made in answer to the query displayed on the screen. Appropriate responses will result in activation of the UPC reader 10, which may be of the laser scanner or other variety.

Once the reader has been activated, the customer may pass each item or article, one by one, UPC code down, over the reader and deposit same on the entry conveyor 12. Absent any problems, the prices and item identifications

will appear on the display 11 as the items are transported by the conveyors through the security tunnel 15, out of reach of the customer to the bagging area 14. When all items or articles have been scanned over reader 10 and placed on entry conveyor 12, the customer will touch the touch sensitive input location corresponding to completion of the checkout tasks. This initiates the presentation to the customer of a printed receipt from the receipt unit 16 and preferably displays a message on screen 11 directing the customer to pass through the control or security gate 17 to the bagging area 14. After the customer has bagged the items and placed the loaded bags in the shopping cart, the customer then proceeds to the cashier station. Each counter 20 will have a separate coded identifier by which it can be identified to the cashier. This coded identification will appear on the printed receipt proffered to the cashier, and will also appear on the master monitor screen along with a subtotal corresponding to that totaled by the receipt unit and temporarily stored in the central processor.

The cashier can use the keyboard to enter credit for proffered coupons and can add any items that could not be handled automatically by the counter 20. These might be oversize items which cannot pass through the conveyor, and would almost certainly be all produce items, which are not ordinarily provided with machine-scannable UPC price labels. As the cashier makes entries through the keyboard, a visual confirmation is provided to the customer by the corresponding display. A final receipt is printed and

furnished by another printer, and the payment transaction is accomplished in the conventional manner.

In order for a self-service system to be effective it must include various safeguards to accommodate inadvertent customer mistakes, to separate customers and to prevent comingling of the articles of one customer with those of another. The system must also insure against attempts to either bypass the system or defraud. For this purpose there are provided a series of electronic curtains or photoelectric devices 21, a weigh scale 22 and, optionally, an article surveillance system 29.

Upon satisfactory scan of an article, the description thereof and its price may be displayed on screen 11. At the same time, the central processor 23 receives information from a data store concerning the normal weight of the article just scanned. This weight is compared with that determined by the weigh scale 22. If there is proper correlation, the conveyors 12 and 13 will convey the article to the bagging area 14. If there is a discrepancy, the system will return the article to the customer for repetition of the scanning operation.

Such a system functions very efficiently, and is meeting with commercial acceptance. Even so, the system, cannot cope with the articles which do not bear source-applied UPC indication. For example, produce items are not provided with supplier or source-applied labels for this purpose.

In the first embodiment, the situation addressed

is that where no UPC indication, source-applied or facility-applied, is provided on articles selected for purchase. The first embodiment is shown in Fig. 2. It will be appreciated by those skilled in the art that the invention, as illustrated, has been incorporated into a self-checkout system otherwise adapted for handling only such items as are provided with UPC price labels.

A central processor 23 may form part of a local network or remote computer. The central processor 23 includes means for storing price data from all articles not provided with a machine-scannable code, in the form of price data store 24. The central processor 23 also comprises means for storing icons, that is, a pictorial image or symbol, corresponding to each of the articles not provided with a machine-scannable code, in the form of an icon store 25.

The video monitor 11 provides a means for displaying the icons, as well as additional information. The touch-actuatable screen of the video monitor 11 forms a customer actuatable means for selectively displaying an icon corresponding to an article placed on the entry conveyor 12.

In use, a customer would approach a self-checkout counter, having selected for purchase both articles with and without UPC labels. Fig. 3 illustrates a typical initial message display 40 on video monitor 11. The screen offers a customer the choice of scanning articles with UPC labels, checking out produce (that is, articles without UPC labels), requesting additional instructions, concluding the checkout

and requesting HELP. The touch actuatable screen comprises a set of "buttons", in the form of predetermined blocks or areas which send signals to the central processor responsive to touching the specific area. The video monitor message displays in Figures 3-7 utilize five such blocks or areas, merely for purposes of illustration. The "buttons" or blocks are identified by reference numerals 41,42,43,44 and 45.

In order to self-checkout all produce items, a customer confronted by message display 40 will press or touch block 42. This will deactivate certain security functions associated with weigh scale 22, and will place the system in a mode appropriate for successively weighing each of the conveyed articles. Actuation of button 42 from message display 40 will result in message display 50 as shown in Fig. 4. Message display 50 instructs the customer to select among broad categories of produce, for example fruit, vegetables, salad greens and melon. Touch buttons or blocks 41,42,43 and 44 are associated with each of these selections respectively. An icon is also associated with each of the categories. Icon 46 may be a bowl of fruit, icon 47 may be a tomato, cucumber or the like, icon 48 may be a head of lettuce and icon 49 may be a slice of watermelon. The appropriate category of produce may be selected by touching any one of buttons 41 to 44, or in a presently preferred embodiment, touching one of icons 46,47,48 or 49. If a customer chooses button 42 or icon 47, the customer may be presented with message display 50 as

shown in Fig. 5. For purposes of simplifying the illustration, message display 60 provides a selection between three kinds of vegetables, namely tomatoes, maize and potatoes. The three selections have buttons 41,42 and 43 associated therewith, as well as corresponding icons 51,52 and 53. If a customer selects tomatoes by touching button 41 or icon 51, the customer may be presented with message display 70, as shown in Fig. 6. Message display 70 offers the customer a final section between three kinds of tomatoes, namely beefsteak, cherry and sauce tomatoes. The three types of tomatoes have associated therewith buttons 42,43 and 44, as well as icons 54, 55 and 56 respectively.

If a customer then touches button 43 or icon 55, a message display 80 as shown in Fig. 7 will indicate that cherry tomatoes have been selected and that the price of cherry tomatoes is £1.25 per Kg. Upon customer selection of the proper icon, the article is automatically conveyed to the weigh scale and the weight of the article(s) is transmitted back to the central processor 23. The central processor 23 can automatically calculate the price for each article in accordance with the selected icon, the stored price data and the weight of the article. Message display 80 can then indicate that the cherry tomatoes weigh 3.36 Kg and that the cost is £1.88. The screen may then provide the customer with an opportunity to checkout more produce, to conclude produce checkout or to get HELP.

It will be appreciated by those skilled in the art that many hierarchies of groups and classes of produces can

be provided to facilitate prompt customer selection of the appropriate produce icon. The selections might be ordered upon category, alphabet listing or even colour. Those skilled in the art will also appreciate that touch-actuatable video screens can be provided with large numbers of "buttons", over the entire surface of the screen.

Certain security measures may also be appropriate for this mode of operation. A first security measure requires that the weight of each article be compared to a predetermined range of values for detecting customer selection of incorrect icons. A weight range store 26 can provide typical upper and lower limits of average produce weights for average purchases. For example, a weight of 20 pounds would likely be inappropriate when the icon for celery has been selected, and a weight of only several ounces is likely inappropriate when the icon for watermelon has been selected. Such anomalies would result in reverse operation of the entry conveyor and a displayed instruction to reselect the proper icon.

An optional surveillance system 29 can also be provided which would include article surveillance security gates 17 as described in the above referred to patents, as well as a remotely controllable video camera 19, which can be monitored at any of the cashier stations or at a central security control section 31, having a security station display 30. When the item has been stopped in security zone, the actual item description will appear in large letters on the video monitor 11 and the actual picture of

the item, together with the price and description thereof, will appear on the monitor at the cashier station or security. The cashier or security personnel can then activate controls to allow the items to proceed, or to reject the item. The video monitor may also be provided with a speaker 27, which will announce the item chosen as the calculation is being made. To the extent that certain items are more susceptible to customer fraud or mistake than others, selection of a "flagged" article can result in a security review each time such an article is checked-out.

Turning now to the second embodiment, shown in Figs. 8-10, the invention provides a system for operator-unassisted checkout of an article selected, from a plurality of articles available for purchase, the selected article bearing UPC indication. The system includes a UPC code reader for reading the UPC indication and for generating an output signal indicative thereof. A storage facility is included for storing signals indicative of the UPCs of all articles available for purchase correlated with identification of articles as being in the categories of (1) those having source of manufacture applied UPC indication, (2) those having facility-applied or customer-applied UPC indication and priced per unit weight, and (3) those having customer-applied UPC indication and priced per article unit.

For category (1) articles, "normal" price processing takes place, i.e., per the systems of the above referred to patents, wherein the price is obtained from memory having price and UPC indication cross-correlated.

For category (2) articles, the article weight is obtained and is multiplied by the price per unit weight, obtained from memory having price per unit weight and UPC indication cross-correlated.

For category (3) articles, the number of articles purchased is determined, and that number is multiplied by the price per individual article, obtained from memory having price per individual article and UPC indication cross-correlated.

The determination of article weight and the determination of number of articles purchased may be determined by apparatus comprising a part of the systems of the referenced patents, as discussed below, or may be otherwise achieved.

Referring to Fig. 8, system 110 in accordance with the invention includes upper channel 112 which is configured according to the above referred to patents and a lower channel 114 configured according to the present invention. Upper channel 112 has a product select aspect 116, wherein a customer selects articles for purchase, dotted line 118 indicating the mechanical passing of the selected articles individually to UPC reader or scanner 120. The output of the reader is applied over line 122 to lower channel 114 and a price store and totalizer 124 is furnished with input signals from lower channel 114, both as below discussed in connection with lower channel operation.

In normal article processing, i.e., where the article has a source-applied UPC indication, as disclosed in

the first of the two U.S. patents, the scanned UPC identification, per selected article, provided on line 126, gives rise to the obtaining of the weight of the article from memory on entry of the article into security tunnel 128. Comparison is effected with an actual weight measurement of the selected article in product weight store and compare unit 130 and the comparison result (when negative) is applied over line 132 to checkout failure system 134, which provides suitable output indication of the checkout failure, likely due to customer fraud.

In following the procedures outlined in the second U.S. patent, the line 126 UPC identification signal is applied to product shape store and compare unit 136, which effects a comparison of memory stored article shape characteristics with those obtained from article examination, such as would be obtained from the above referred to entry light curtain associated with the security tunnel of the two U.S. patents. The UPC identification signal may also be applied from line 126 to second UPC read and compare unit 138, wherein the article UPC is again read in the security tunnel and compared with that obtained from reader 120. Further, the line 126 signal may be applied to EAS store and compare unit 140 which functions as above described. The outputs, on failure of positive results in comparisons in units 136,138 and 140, apply an actuating input over line 132 to checkout failure system 134.

Lower channel 114, which may be considered to be a subsystem to the system of upper channel 112 includes a

product UPC look-up table comparator 142, which receives the UPC identification on line 144 from reader 20. Comparator 142 includes in storage all UPC identifications cross-correlated with categories (1) - (3) above noted. The comparator regenerates the input UPC signal as NORMAL, on line 146 where the UPC look-up establishes that the input UPC signal corresponds to an article which bears a source-applied UPC indication, as PER WEIGHT, on line 148 where the UPC look-up establishes that the input UPC signal corresponds to an article which bears a customer-applied UPC indication and is to be sold by bulk weight, and as PER PIECE, on line 150 where the UPC look-up establishes that the input UPC signal corresponds to an article which bears a customer-applied UPC indication and is to be sold at a certain price per unit.

The line 146 NORMAL signal is applied to price store and totalizer 124 and responsive thereto, article price is obtained from memory cross-correlating UPC and price. The price is then totalized with any prior price totalization.

The line 148 PER WEIGHT signal is applied to PER WEIGHT price store 152 which is responsive thereto to provide an output signal on line 154 indicative of the price per unit weight for the article corresponding to the UPC indication in the line 148 signal. Line 156 has a signal thereon which is indicative of the actual weight (WT) of the article selected for purchase, which may be obtained, for example, from unit 130 of upper channel 112, which is in

turn served with weight input from a scale beneath a conveyor transporting articles in the above referred to patents.

The line 154 and line 156 signals are applied to PER WEIGHT price computer 158, which multiplies the weight by the price per unit weight to obtain the cost for the selected article. An output signal indicative of such cost is applied to line 160 and thence to an advanced processing stage of price store and totalizer 124, i.e., to be added to prior cost totalizations therein.

The line 150 PER PIECE signal is applied to PER PIECE price store 162 which is responsive thereto to provide an output signal on line 164 indicative of the price per piece for the article corresponding to the UPC indication in the line 150 signal. Line 166 has a signal thereon which is indicative of the actual number (#) of the article selected for purchase, which may be obtained, for example, from unit 136 of upper channel 112, which is in turn served with article shape input from circuitry responsive to the entry light curtain in the referenced patents. Number of articles may otherwise be entered through the use of a numeric key pad.

The line 164 and line 166 signals are applied to PER PIECE price computer 168, which multiples the number of the article by the price per piece to obtain the cost for the selected article. An output signal indicative of such cost is applied to line 170 and thence to the advanced processing stage of price store and totalizer 124 as above

discussed for the line 160 signal.

By way of example, a customer is assumed to have selected one-half dozen bananas. The bananas are placed in a bag at the point of selection and bearing a UPC indication for bananas, the indication either being pre-applied by the store personnel or applied by the customer. In the course of operator-unassisted checkout, the UPC indication on the bag is read and, preferably, the individual bananas are taken from the bag and placed individually on the conveyor. As the bananas pass through the entry light curtain they are individually sensed and their number is counted to provide the line 166 signal above. The system operation is concurrently as above discussed.

Logic operations, indicative particularly of those of comparator 142 and computers 158 and 168, will be further understood from the flow charts of Figs 9 and 10.

Subsystem 114 is entered (ENTER) in step 200. In step 202 (READ ARTICLE UPC), article UPC is scanned. In step 204(? IS UPC SOURCE-APPLIED UPC), a determination is made as to whether the article is of the customary type, having its UPC indication applied at the point of origin. If this inquiry is answered in the affirmative, line 206 leads to step 208 (GO TO NORMAL PROCESSING).

If the step 204 inquiry is answered in the negative, line 210 leads to step 212 (? IS UPC FOR AN ARTICLE TO BE SOLD BY WEIGHT), determination is made as to whether the article is of type to be bulk weight retailed. If yes, line 214 leads to step 216 (OBTAIN PRICE PER UNIT

WEIGHT & WEIGHT), wherein reference is made to the aforementioned actual weight indication and to memory correlating UPC and price per unit weight. Step 218 follows (OUTPUT ARTICLE COST), wherein the weight indication is multiplied by the per unit weight price. This leads to step 220 (GO TO ADVANCED PROCESSING).

In the event that the response to the step 212 inquiry is answered in the negative, line 222 leads to step 224 (?IS UPC FOR AN ARTICLE TO BE SOLD BY PIECE), determination is made as to whether the article is of type to be piece retailed. If yes, line 226 leads to step 228 (OBTAIN PRICE PER PIECE & # OF PIECES), wherein reference is made to the actual piece count and to memory correlating UPC and price per unit weight. Step 230 follows (OUTPUT ARTICLE COST), wherein the piece count indication is multiplied by the per piece price. Line 232 leads to step 220 (GO TO ADVANCED PROCESSING).

In the event that the selected article is not found to be in any one of categories (1) - (3), as would be the case where negative response occurs in each of steps 204,212 and 224, line 234 leads to step 236 (ERROR), wherein the subsystem provides output indication of an error condition to store personnel.

Phantom line indication is made in Fig. 2 of step 238 (EXERCISE SECURITY MEASURES) to indicate the option in the subsystem operation to include the security measures set forth with particularity in the above referred to patents. By way of example, lines 240 and 242 show step 238 in

practice concurrently with steps 216 and 218, whereby a weight verification is made as between the article weight as measured and the article weight as derived from memory containing article weight correlated with UPC indication. Absent such verification, the customer is presumed to have made a product substitution from the point of article scanning to conveyor transport thereof. Lines 244 and 246 indicate the security measure option in place with practice of steps 228 and 230.

Various changes in system structure and modifications in practice may be introduced without departing from the invention. Accordingly, it is to be understood that the foregoing specific embodiments and particulary described practices are intended in an illustrative and not in a limiting sense.

CLAIMS:-

1. The combination of, in an operator-unattended checkout system for processing articles selected for purchase and of a first type bearing supplier-applied UPC indication and of a second type not having supplier-applied UPC indication:

(a) reader means for generating output signals indicative of article UPC indication where present on articles;

(b) first processing means operable without customer input for using said reader means output signals for determining first type article price and generating output signals indicative thereof;

(c) customer-interactive display means for use through customer input thereto for directing system operation selectively from such first processing means operation to the computation of second type article price;

(d) scale means for determining article weight and generating output signals indicative of determined article weight; and

(e) second processing means operable on said customer input to said display means for using said scale means output signals for generating output signals indicative of second type article price.

2. The combination according to claim 1, further including:

(f) conveyor means for receiving articles and conveying them to said scale means;

said first processing means being further operable for determining whether the article read by said reader means is the same article as that weighed by said scale means and for generating further output signals indicative of failure of such determination; and

(g) control means responsive to said first processing means further output signals for reversing the direction of movement of said conveyor means.

3. The combination according to claim 2, further including:

(h) totalizing means for receiving said first processor means first-mentioned output signals and said second processor means output signals for providing a totalized price for said articles selected for purchase.

4. The combination according to claim 1, wherein said articles of said second type bear no UPC indication, said display means presenting a first display message for customer initiated checkout of said articles of said second type bearing no UPC indication.

5. The combination according to claim 4, wherein said second processor means is responsive to customer interaction with said display means during display of said first message for displaying a second display message comprising icons

indicative of said articles of said second type bearing no UPC indication, said display means being responsive to customer interaction with said second display message for generating output signals indicative of customer selected icons.

6. The combination according to claim 5, wherein said second processor means includes storage means storing therein first signals indicative of said icons and second signals correlated with said first signals and indicative of prices of articles of said second type bearing no UPC indication.

7. The combination according to claim 6, wherein said second processor means includes comparator means for receiving said display means output signals and comparing them with said stored first signals and generating as said second processor means output signals, the stored second signal correlated with stored first signals giving rise to affirmative comparison.

8. The combination according to claim 1, wherein said second type articles bear UPC indication not source-applied, said second processor means including comparator means for receipt of said reader means output signals and for providing first and second separate output signals respectively indicating that the UPC indication in said reader means output signals is for an article retailed by

bulk weight pricing, and the UPC indication in said reader means output signals is for an article retailed per piece pricing.

9. The combination according to claim 8, wherein said second processor means includes storage means for storage of first and second stored signals respectively indicative of article price per unit of weight and article price per piece, both cross-correlated with article UPC indication.

10. The combination according to claim 9, wherein said second processor means further includes means for providing first and second identifying signals respectively indicative of the weight and the numbers of an article selected for purchase.

11. The combination according to claim 10, wherein said second processor means further includes first computer means operative upon occurrence of said comparator means first output signal for receiving said first stored signal and said first identifying signal and computing selected article price therefrom and second computer means operative upon occurrence of said comparator means second output signal for receiving said second stored signal and said second identifying signal and computing selected article price therefrom.

12. A system for operator-unattended checkout of bulk or other articles, constructed substantially as herein described with reference to and as illustrated in Figs. 2 to 7 or Figs. 8 to 10 of the accompanying drawings.

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